



IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant : Lance W. Russell

Art Unit : 2153

Serial No. : 09/888,544

Examiner : Barqadle, Yasin M.

Filed : June 25, 2001

Title : Routing Meta Data for Network File Access

Commissioner for Patents

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PRE-APPEAL BRIEF REQUEST FOR REVIEW

I. Status of claims

Claims 1, 2, 4-6, 12, 13, 19, and 21-27 are pending.

These claims are the subject of this Pre-Appeal Brief Request for Review.

II. Claims 1, 2, 6, 12, 13, and 19

The Examiner has rejected claims 1, 2, 6, 12, 13, and 19 under 35 U.S.C. § 102(e) over Vahalia (U.S. 2005/0251500).

The Examiner's rejection of claim 1 under 35 U.S.C. § 102(e) over Vahalia should be withdrawn because Vahalia does not disclose a method that includes sending from a source site to a client site routing meta data comprising one or more node addresses along one or more network routes between the client site and the source site in response to a request from the client site for access to a data file stored in one or more physical storage systems at the source site, as recited in claim 1.

The Examiner has stated that Vahalia discloses this feature of claim 1 in ¶¶ 15 and 81-89 (see page 3 of final Office action in which the Examiner has quoted ¶ 15). Contrary to the Examiner's statement, however, none of the cited paragraphs teaches this feature of claim 1.

With respect to transmissions from the server to the client in response to a file access request ¶ 15 merely teaches that the server sends to the client metadata that includes

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information specifying the data storage locations for storing data of the file. In ¶ 52, Vahalia explains that:

The term metadata refers to information about the data, and the term metadata is inclusive of file access information and file attributes. The file access information includes the locks upon the files or blocks of data in the files. The file attributes include pointers to where the data is stored in the cached disk array.

Thus, the metadata sent by Vahalia's server is not routing metadata comprising one or more node addresses along one or more network routes between the client and the server.

¶¶ 81-89 merely describe a process of using the CIFS protocol for sharing data sets among data movers (see ¶ 68). ¶ 81 describes the general process by which a forwarder data mover communicates with an owner data mover. ¶¶ 82-88 describes the format of server message blocks (SMBs) that the forwarder data mover exchanges with the owner data mover in order to access resources on the owner data mover. ¶ 89 describes the process by which the forwarder data mover establishes a TCP connection with the owner data mover.

Thus, the paragraphs cited by the Examiner do not support his statement that Vahalia discloses the feature of claim 1 recited above. Indeed, there is not teaching of this feature anywhere in Vahalia's disclosure.

Vahalia discloses several embodiments of a network file server that allows a client to access a data file stored in a file system of a cached disk array. The different server embodiments that are disclosed in Vahalia are shown in FIGS. 1-4. None of these embodiments, however, sends to the client site routing meta data comprising one or more node addresses along one or more network routes between the client site and the source site in response to a request from a client site for access to a data file stored in one or more physical storage systems at the source site, as recited in claim 1.

In the embodiment shown in FIG. 1, a client 26 connects to a data mover 21 over a data network 30. In response to a request from the client 26 for access to a data file, the data mover 21 either accesses the data file directly from file system 23 or indirectly from file system 24 through the data mover 22, which owns the file system 24. In both of these cases, the data mover 21 streams read/write data between the client 26 and the file system in which the data file is stored over the existing network connection (see ¶¶ 10, 48, 49, 95). The data mover 21, however, does not send to the client 26 routing meta data comprising one or more

node addresses along one or more network routes between the client site and the source site in response to the request to access the data file. Indeed, in accordance with Vahalia's data access process the client 26 does not establish another network connection over another network route after the initial connection with the data mover 21 has been established.

In the embodiment shown in FIG. 2, a client 46 connects to a data mover 41 over a data network 50. In response to a request from the client 46 for access to a data file, the data mover 41 accesses the data file either directly from file system 43 or directly from file system 44 over a high-speed direct (point-to-point) data bypass path 48 that bypasses the data mover 42, which owns the file system 44. In both of these cases, the data mover 41 streams read/write data between the client 46 and the target file system in which the data file is stored over the existing network connections between the client and the target file system (see ¶ 53). The data mover 41, however, does not send to the client 46 routing meta data comprising one or more node addresses along one or more network routes between the client site and the source site in response to the request to access the data file. Indeed, in accordance with Vahalia's data access process the client 46 does not establish another network connection over another network route after the initial connection with the data mover 41 has been established.

In the embodiment shown in FIG. 3, a client 64 connects to a data mover 61 over a data network 70 and connects to a file system 62 owned by the data mover 61 over a high-speed point-to-point bypass data path 66. In response to a request from the client 64 for access to a data file, the data mover 61 grants a lock to the client 64 and sends to the client 64 metadata of the file including pointers to where the data to be accessed is stored in the file system 62. The client 64 uses the metadata to send a read/write request to the file system 62 over the existing point-to-point bypass data path 66 (see ¶ 56). The data mover 61 does not send to the client 64 routing meta data comprising one or more node addresses along one or more network routes between the client site and the source site in response to the request to access the data file. Indeed, as is well-known in the art, the client 64 and the file system 62 do not use physical (e.g., IP) addresses when transmitting frames over the point-to-point bypass data path 66 because there is only one possible destination for each transmission.

The embodiment shown in FIG. 4 combines the features of the embodiments of FIGS. 2 and 3. In particular, a client 88 connects to a first data mover 81 over a network

connection, connects to a file system 83 owned by the first data mover 81 over a high-speed point-to-point bypass data path 92, and connects to a file system 84 owned by a second data mover 82 over a high-speed point-to-point bypass data path 93. The client 88 obtains access to a data file stored in file system 83 over the point-to-point bypass data path 92 in the manner described above in connection with the embodiment of FIG. 3. The client 88 obtains access to a data file stored in the file system 84 over the point-to-point bypass data path 93 in an analogous way, except that the metadata request from the client 88 is forwarded from the first data mover 81 to the second data mover 82 (see ¶ 62). The data mover 81 does not send to the client 88 routing meta data comprising one or more node addresses along one or more network routes between the client site and the source site in response to the request to access the data file. Indeed, as is well-known in the art, the client 88 and the file systems 83, 84 do not use physical (e.g., IP) addresses when transmitting frames over the point-to-point bypass data paths 92, 93 because there is only one possible destination for each transmission.

In summary, Vahalia does not disclose a method that includes sending from the source site to a client site routing meta data comprising one or more node addresses along one or more network routes between the client site and the source site in response to a request from the client site for access to a data file stored in one or more physical storage systems at the source site, as recited in claim 1.

For at least these reasons, the Examiner's rejection of independent claim 1 under 35 U.S.C. § 102(e) over Vahalia now should be withdrawn.

Each of claims 2 and 6 incorporates the features of independent claim 1 and therefore is patentable over Vahalia for at least the same reasons explained above.

The pertinent features of independent claims 12 and 19 essentially track the features of independent claim 1 discussed above and, therefore, claims 12 and 19 are patentable over Vahalia for at least the same reasons.

III. Claims 4, 5, 23, 24, 26, and 27

The Examiner has rejected claims 4, 5, 23, 24, 26, and 27 under 35 U.S.C. § 103(a) over Vahalia in view of Koyanagi (U.S. 20010013067).

Claims 4 and 5 incorporate the features of independent claim 1 and claims 23, 24, 26, and 27 incorporate the features of independent claim 12. Koyanagi does not make-up for the failure of Vahalia to teach the features of independent claim 1 discussed above. Indeed, the

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Examiner has cited Koyanagi merely for the proposition that routing meta data comprises a next hop address (see page 5 of the final Office action). Therefore, claims 4, 5, 23, 24, 26, and 27 are patentable over Vahalia in view of Koyanagi for at least the same reasons explained above in connection with independent claim 1.

IV. Claims 21, 22, and 25

The Examiner has rejected claims 21, 22, and 25 under 35 U.S.C. § 103(a) over Vahalia in view of Kato (U.S. 6,223,249).

Claim 21 incorporates the features of independent claim 1, claim 22 incorporates the features of independent claim 12, and claim 25 incorporates the features of independent claim 19. Kato does not make-up for the failure of Vahalia to teach the features of independent claim 1 discussed above. Indeed, the Examiner has cited Kato merely for showing in FIGS. 10A and 10B a block map that arranges data by disk number and sector number (see page 6 of the final Office action). Therefore, claims 21, 22, and 25 are patentable over Vahalia in view of Kato for at least the same reasons explained above in connection with claim 1.

V. CONCLUSION

For the reasons explained above, all of the pending claims are now in condition for allowance and should be allowed.

Charge any excess fees or apply any credits to Deposit Account No. 08-2025.

Respectfully submitted,

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